

Jaw relation

Definition – it is the relationship between the mandible and maxilla in horizontal or vertical dimensions.

Horizontal jaw relation: it is the relation of the mandible to the maxilla in the antero-posterior direction.

Centric relation of the jaws: The most retruded physiologic relation of the mandible to the maxillae to and from which the individual can make lateral movements. It is a condition that can exist at various degrees of jaw separation. It occurs around the terminal hinge axis

Eccentric jaw relation: any relationship between the jaws other than centric.

Centric occlusion: The occlusion of opposing teeth when the mandible is in centric relation. This may or may not coincide with the maximal intercuspal position

Maximal intercuspal position: The complete intercuspation of the opposing teeth independent of condylar position, sometimes referred to as the best fit of the teeth regardless of the condylar position

Centric slide: the movement of the mandible while in centric relation, from the initial occlusal contact into maximum intercuspation.

Vertical jaw relation: it is the relation of the mandible to the maxilla in vertical dimension. It represents the vertical dimension of the lower third of the face. It has two dimensions; vertical dimension of occlusion, and vertical dimension of rest.

Vertical dimension of occlusion: it is the dimension of the face when the teeth closed together in maximum contact.

Vertical dimension of occlusion (VDO): the distance measured between two points when the occluding members are in contact (either teeth or occlusion blocks).

Vertical dimension of rest (VDR): the distance of the face when the mandible is at rest position.

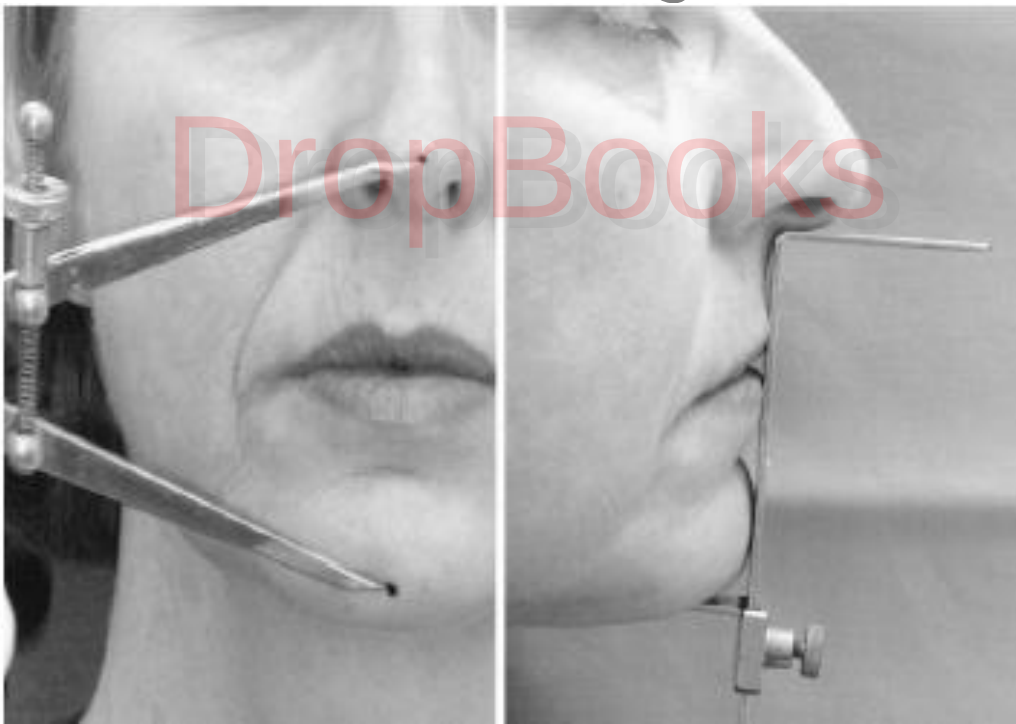
Mandibular rest position: the mandibular position assumed when the head is in an upright position and the involved muscles, particularly the elevator and depressor groups, are in equilibrium in tonic contraction, and the condyles are in a neutral, unstrained position

Inter-occlusal distance: The vertical dimension of rest is usually 2-4 mm greater than the vertical dimension of occlusion. This difference is called the inter-occlusal distance; freeway space or inter-occlusal gap i.e. $VDR - VDO = 2\text{mm or } 4\text{mm}$

- In dentulous individuals the teeth act as a vertical stop to the movement of the mandible when the mouth is closed. When the natural teeth are lost, this vertical stop is lost.
- The vertical dimension of rest may remain constant for a long period after teeth loss as long as the muscles, the ligaments, the joints and the CNS function normally.
- During jaw relation record, the mandibular rest position is determined first then the free way space is subtracted to determine the vertical dimension of occlusion.
- The mandibular rest position may be determined by several methods including: phonetics, swallowing threshold, esthetics and facial measurement
- The mandibular rest position is subject to some variables. These are short term (e.g.; head position, anxiety), or long term variables (e.g.: teeth extraction, diseases affecting TMJ)
- If the constructed dentures have high vertical dimension of occlusion it will lead to pain, accelerated bone resorption of the residual ridges, bad esthetics; chewing inability, TMJ problems and clicking of teeth.
- If the constructed dentures have severely reduced vertical dimension of occlusion; it may lead to anterior repositioning of the mandible, TMJ problems, resorption of the anterior segment of residual ridges, angular cheilitis, bad esthetics, and chewing inefficiency.

Steps of jaw relation registration:

- Checking the occlusion blocks
- Orientation of the occlusion plane to be parallel to interpupillary line in the anterior segment and the ala-tragus line in the posterior segments.
- Establishing the facial contour
- Recording the VDO
- Face bow record of the relation of maxilla to the hinge axis and transfer of the maxillary cast to the articulator
- Recording the centric relation and mounting the lower cast
- Eccentric jaw relations: lateral and protrusive records according to type of articulator used for adjusting the articulator condylar guidance (horizontal and lateral).



Calliper method

Willi's method

Methods of determining vertical dimension.